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**ATTACHMENT B7**

**PERMITTEE LEVEL TRU WASTE APPROVAL AND ACCEPTANCE  
PROCESSES**

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**ATTACHMENT B7**

**PERMITTEE LEVEL TRU WASTE APPROVAL AND ACCEPTANCE**  
**PROCESSES**

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Introduction

This part of the Waste Analysis Plan (**WAP**) describes the actions that the Permittees will take to approve and accept waste for storage and disposal at the Waste Isolation Pilot Plant (**WIPP**), including waste stream profile form (**WSPF**) approval and waste examination.

The Permittees demonstrate compliance with the Hazardous Waste Facility Permit (**HWFP**) by assuring that the waste analysis processes performed by generator/storage sites produce data compliant with the WAP and through the waste screening and verification processes. Verification occurs at three levels: 1) the data generation level, 2) the project level, and 3) the Permittee level. The Permittees also examine a representative subpopulation of waste prior to disposal to assure that the waste contains no ignitable, corrosive or reactive waste; and that assigned Environmental Protection Agency (**EPA**) hazardous waste numbers are allowed by the HWFP. The waste examination activities described herein may occur at the WIPP facility or off-site (e.g., generator/storage site).

B7-1 Permittee Level Waste Screening and Verification of TRU Mixed Waste

Permittee waste screening is a two-phased process. Phase I will occur prior to configuring shipments of **transuranic (TRU)** mixed waste. Phase II will occur after the configuration of shipments of TRU mixed waste but before it is placed into storage or disposed at the WIPP facility. Figure B7-1 presents the TRU mixed waste screening process.

B7-1a Phase I Waste Stream Screening and Verification

Audits of generator/storage sites will be conducted as part of the Permittees' Audit and Surveillance Program (Permit Attachment B6). The RCRA portion of the generator/storage site audit program will provide on-site verification of waste analysis procedures; Batch Data Report (**BDR**) preparation; and record keeping to assure that all applicable provisions of the WAP requirements are met. As part of the waste analysis data submittal, the generator/storage site will also transmit the data on a container basis via the WIPP Waste Information System (**WWIS**). This data submittal can occur at any time as the data are being collected, but will be complete for each container prior to shipment of that container. The WWIS will conduct internal edit/limit checks as the data are entered, and the data will be available to the Permittees as supporting information for WSPF review. NMED will have read-only access to the WWIS as necessary to determine compliance with the WAP. The initial WSPF check performed by the Permittees will include WWIS data submitted by the generator/storage site for each waste container. The Permittees will compare ongoing sampling/waste analysis data obtained and submitted via the WWIS to the approved WSPF. If this comparison shows that containers have hazardous wastes not reported on the WSPF, or a different Waste Matrix Code applies, the data are rejected and the waste containers are not accepted for shipment until a new or revised WSPF is submitted to and approved by the Permittees.

1 Another portion of the Phase I verification is the WSPF approval process. At the WIPP facility, this  
2 process includes verification that all of the required elements of the WSPF and the Waste  
3 Analysis Information Summary are present (Permit Attachment B3) and that the waste analysis  
4 information meets acceptance criteria required for compliance with the WAP (Section B-1d).

5 If discrepancies regarding hazardous waste number assignment or Waste Matrix Code  
6 designation arise as a result of the Phase I review, the generator/storage sites will be contacted  
7 by the Permittees and required to provide the necessary additional information to resolve the  
8 discrepancy before that waste stream is approved for disposal at the WIPP facility. If the  
9 discrepancy is not resolved, the waste stream will not be approved.

10 B7-1a(1) Permittees' Audit and Surveillance Program

11 An important part of the Permittees' verification process is the Permittees' Audit and  
12 Surveillance Program. The focus of this audit program is compliance with this WAP and the  
13 Permit. This audit program addresses the AK implementation process, including waste sampling  
14 and analysis activities, and assures compliance with **standard operating procedures (SOPs)**  
15 and the WAP. Audits will assure that containers and their associated documentation are  
16 adequately tracked throughout the waste handling process. Operator qualifications will be  
17 verified, and implementation of **quality assurance/quality control (QA/QC)** procedures will be  
18 surveilled. A final report that includes generator/storage site or Permittee approved laboratory  
19 audit results and applicable WAP-related corrective action report (**CAR**) resolution will be  
20 provided to **New Mexico Environment Department (NMED)** for approval, and will be kept in the  
21 WIPP facility operating record until closure of the WIPP facility.

22 For generator/storage sites that have NMED approved final audit reports as of the effective date  
23 of Permit Attachment B7, those generator/storage sites may continue to comply with the  
24 provisions of the Permit in effect prior to the approval of Permit Attachment B7 until the effective  
25 date of Permit Attachment B7 or until the next annual recertification audit for that  
26 generator/storage site, which ever occurs later.

27 A generator/storage site must first prepare a Quality Assurance Project Plan (**QAPjP**), which  
28 includes applicable WAP requirements, and submit it to the Permittees for review and approval  
29 (Permit Attachment B5). Once approved, a copy of the QAPjP will be provided to NMED. The  
30 generator/storage site will implement the specific parameters of the QAPjP after it is approved.  
31 An initial audit will be performed after QAPjP implementation and prior to the generator/storage  
32 site being certified for shipment of waste to WIPP. Audits will be performed at least annually  
33 thereafter, including the possibility of unannounced audits (i.e., not a regularly scheduled audit).  
34 These audits will allow NMED to verify that the Permittees have implemented the applicable  
35 requirements of the WAP and that generator/storage sites have implemented the **acceptable**  
36 **knowledge (AK)** process for the analysis of waste and meet applicable WAP requirements. The  
37 Permittees will also audit annually the Permittee approved laboratories performing waste  
38 sampling and/or analysis.

B7-1a(2) WWIS Description

All generator/storage sites planning to store or dispose of TRU mixed waste at WIPP will supply the required data to the WWIS. The WWIS Data Dictionary includes all of the data fields, the field format and the limits associated with the data as established by this WAP. These data will be subjected to edit and limit checks that are performed automatically by the database, as defined in the *WIPP Waste Information System User's Manual for Use by Shippers/Generators* (DOE, 2001).

The Permittees will coordinate the data transmission with each generator/storage site. Actual data transmission will use appropriate technology to assure the integrity of the data transmissions. The Permittees will require sites with large waste inventories and large databases to populate a data structure provided by the Permittees that contains the required data dictionary fields that are appropriate for the waste stream (or waste streams) at that site. For example, totals analysis data will not be requested from sites that do not have homogeneous solids or soil/gravel waste. The Permittees will access these data via the Internet to assure an efficient transfer of this data. Small quantity sites will be given a similar data structure by the Permittees that is tailored to their types of waste. Sites with very small quantities of waste will be provided with the ability to assemble the data interactively to this data structure on the WWIS.

The Permittees will use the WWIS to verify that all of the supplied data meet the edit and limit checks prior to the shipment of any TRU mixed waste to WIPP. The WWIS automatically will notify the generator/storage site if any of the supplied data fails to meet the requirements of the edit and limit checks via an appropriate error message. The generator/storage site will be required to correct the discrepancy with the waste or the waste data and re-transmit the corrected data prior to acceptance of the data by the WWIS. The Permittees will review data reported for each container of each shipment prior to providing notification to the shipping generator/storage site that the shipment is acceptable. Read-only access to the WWIS will be provided to the NMED. Table B7-1 contains a listing of the data fields in the WWIS that are required as part of this Permit, when applicable.

The WWIS will generate the following:

- Waste Emplacement Report

This report will be added to the operating record to track the quantities of waste, date of emplacement, and location of authorized containers or container assemblies in the repository. The Permittees will document the specific panel room or drift that an individual waste container is placed in as well as the row/column/height coordinates location of the container or containers assembly. This report will be generated on a weekly basis. Locations of containers or container assemblies will also be placed on a map separate from the WWIS. Reports and maps that are included as part of the operating record will be retained at the WIPP site, for the life of the facility.

1       •       Shipment Summary Report

2       This report will contain the container identification numbers (IDs) of every container in  
3       the shipment, listed by Shipping Package number and by assembly number (for seven-  
4       packs, four-packs, and three-packs), for every assembly in the Shipping Package. This  
5       report is used by the Permittees to verify containers in a shipment and will be generated  
6       on a shipment basis.

7       •       Waste Container Data Report

8       This report will be generated on a waste stream basis and will be used by the Permittees  
9       during the WSPF review and approval process. This report will contain the data listed in  
10      the Waste Analysis Module on Table B7-1. This report will be generated and attached to  
11      the WSPF for inclusion in the facility operating record and will be kept for the life of the  
12      facility.

13      •       Reports of Change Log

14      This will consist of a short report that lists the user ID and the fields changed. The report  
15      will also include a reason for the change. A longer report will list the information provided  
16      on the short report and include a before and after image of the record for each change, a  
17      before-record for each deletion, and the new information for added records. These  
18      reports will provide an auditable trail for the data in the database.

19      Access to the WWIS will be controlled by the Permittees' Data Administrator (DA) who will  
20      control the WWIS users based on approval from management personnel.

21      The TRU mixed waste generator/storage sites will only have access to data that they have  
22      supplied, and only until the data have been formally accepted by the Permittees. After the data  
23      have been accepted, the data will be protected from indiscriminate change and can only be  
24      changed by an authorized DA.

25      The WWIS has a Change Log that requires a reason for the change from the DA prior to  
26      accepting the change. The data change information, the user ID of the authorized DA making  
27      the change, and the date of the change will be recorded in the data change log. The data  
28      change log cannot be revised by any user, including the DA. The data change log will be  
29      subject to internal and external audits and will provide an auditable trail for all changes made to  
30      previously approved data.

31      B7-1a(3) Examination of the Waste Stream Profile Form and Container Data Checks

32      The Permittees are responsible for verifying the completeness and accuracy of the WSPF  
33      (Permit Attachment B3, Section B3-11b(1)). Figure B7-2 presents the Permittees waste stream

approval process. The generator/storage sites shall analyze their waste in accordance with the requirements of Permit Attachment B, Waste Analysis Plan, Permit Attachment B1 Waste Analysis Sampling Methods, Attachment B2 Statistical Methods Used in Sampling and Analysis, and Attachment B4 TRU Mixed Waste Analysis Using Acceptable Knowledge, and assure that waste proposed for storage and disposal at WIPP meets the Treatment, Storage, and Disposal Facility-Waste Acceptance Criteria (TSDF-WAC) (Permit Conditions II.C.3.a through II.C.3.h.). The generator/storage site shall assemble the AK information into an auditable record<sup>1</sup> for the waste stream as described in Permit Attachment B4. To resolve the assignment of EPA hazardous waste numbers, the generator/storage site shall perform sampling and analysis on a representative sample of the waste stream. Headspace gas sampling and analysis shall be performed on debris waste. Solids sampling and analysis shall be performed for homogeneous solid or soil/gravel waste streams.

For those waste streams that have sufficient AK information to assign EPA hazardous waste numbers the generator/storage sites may submit a request to the Permittees for an AK Sufficiency Determination.

The request will include an AK Summary Report that addresses the following required items:

1. Mandatory AK information is available (Permit Attachment B4-2a and B4-2b);
2. A waste stream has been properly delineated and meets the HWFP definition of a waste stream (Permit Attachment B4-2b and B-1a);
3. The AK process described in the HWFP was followed (for example, AK personnel were appropriately trained; discrepancies in the AK record were documented and resolved (Permit Attachment B4-3a);
4. The generator/storage site has developed a written procedure for compiling the AK information and assigning hazardous waste numbers as required by Permit Attachment B4-3b;
5. The generator/storage site has assessed the AK process (Permit Attachment B4-3b);
6. The generator/storage site has documented evidence that the waste meets the TSDF-WAC (Permit Condition II.C.3.a through II.C.3.h).

The Permittees will review the request, resolve comments with the generator/storage site and if the Permittees determine that the AK is sufficient, they may forward the request to NMED for an AK Sufficiency Determination. Based on NMED's determination, the Permittees will notify the

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<sup>1</sup> "Auditable records" mean those records which allow the Permittees to conduct a systematic assessment, analysis, and evaluation of the Permittees compliance with the WAP and this Permit.

generator/storage sites whether the AK information is sufficient. If the AK information is not sufficient the Permittees will require the generator/storage site to perform sampling and analysis per Permit Attachment B2 and Figure B2-1. In lieu of requesting an AK Sufficiency Determination, the generator/storage site may decide to perform sampling and analysis in accordance with Permit Attachment B2 and Figure B2-1. After a complete AK record has been compiled, the generator/storage site will complete a WSPF and Waste Analysis Information Summary. The Waste Analysis Information Summary will include an AK Summary Report. The assignment of the waste stream description, Waste Matrix Code Group, and Summary Category Groups; the results of waste analyses; the acceptable knowledge summary documentation; the methods used for waste analysis; the Carlsbad Field Office (CBFO) certification, and appropriate designation of EPA hazardous waste number(s) will be examined. If the WSPF is inaccurate, efforts will be made to resolve inaccuracies by contacting the generator/storage site in order for the waste stream to be eligible for shipment to the WIPP facility. The WSPF check against waste container data will occur during the initial WSPF approval process.

The EPA hazardous waste numbers for the wastes that appear on the Waste Stream Profile Form will be compared to those in the WIPP Hazardous Waste Permit Application Part A, Permit Attachment O, to ensure that only approved wastes are accepted for storage or disposal at WIPP. Some of the waste may also be identified by unique state hazardous waste numbers. These wastes are acceptable at WIPP as long as the TSDF-WAC are met. The Waste Analysis Information Summary will be reviewed by the Permittees to verify that the waste has been classified correctly with respect to the assigned EPA hazardous waste numbers. The Permittees will verify that TSDF-WAC compliance has been met by the generator/storage site.

Waste data transferred via the WWIS after WSPF approval will be compared with the approved WSPF. Any container from an approved hazardous waste stream with a description different from its WSPF will not be received at WIPP.

The Permittees will also verify that the three different types of data specified below are available for every container holding TRU mixed waste before that waste is transported to WIPP: 1) an assignment of the waste stream's waste description (by Waste Matrix Codes) and Waste Matrix Code Group; 2) a determination of ignitability, reactivity, and corrosivity; and 3) a determination of compatibility. The verification of waste stream description will be performed by reviewing the WWIS for consistency in the waste stream description and WSPF. The Waste Analysis Information Summary will indicate if the waste has been checked for the characteristics of ignitability, corrosivity, and reactivity. The final verification of waste compatibility will be performed using Appendix C1 of the WIPP Resource Conservation and Recovery Act (RCRA) Part B Permit Application (DOE, 1997), the compatibility study.

Any container with unresolved discrepancies associated with hazardous waste analysis will not be stored or disposed at the WIPP facility until the discrepancies are resolved. All shipments of the subject waste stream will cease until the corrective action(s), as necessary, have been implemented and the discrepancy resolved. The Permittees will notify NMED when the certification status of a waste stream at a site is revoked. Waste analysis and certification

authority will not be reinstated until the site demonstrates all corrective actions have been implemented and the program is reassessed by the Permittees.

B7-1a(4) Data Review, Validation, and Verification Requirements at Permittee Level

The final level of data verification occurs at the Permittee level and must, at a minimum, consist of reviewing a sample of the Batch Data Reports, during audits of the generator/storage sites, to verify completeness. The Permittees are responsible, during audits of the generator/storage sites and Permittee approved laboratories, for the verification that Batch Data Reports include the following:

- Project-level signature releases
- Listing of all waste containers being presented in the report
- Listing of all sampling, and analytical batch numbers associated with each waste container being reported in the package
- Analytical Batch Data Report case narratives
- Site Project Manager Summary
- Data Validation Summary
- Complete summarized qualitative and quantitative data for all waste containers with data flags and qualifiers.

For each WSPF submitted for approval, the Permittees must verify that each submittal (i.e., WSPF and Waste Analysis Information Summary) is complete and notify the originating site in writing of the WSPF approval. For subsequent shipments made after the initial WSPF approval, the verification will also include WWIS internal limit checks (Section B7-1a(2)).

B7-1a(5) Reconciliation at the Permittee Level

The Permittees must also assure that data of sufficient type, quality, and quantity are collected to meet WAP Data Quality Objectives (DQOs). The Permittees will assure sufficient data have been collected to determine if the waste analysis information is adequate to demonstrate the Permittee's compliance with the HWFP. This is performed during Permittees' review of the WSPF and Waste Analysis Information Summary.

B7-1b Phase II: Waste Shipment Screening and Verification

Phase II of the waste shipment screening and verification process includes examination of a waste shipment prior to placement into storage or disposal at the WIPP facility. In Phase II the Permittees will determine: 1) the completeness and accuracy of the EPA Hazardous Waste Manifest; 2) land disposal restriction notice completeness; and 3) waste shipment completeness and container defects. In addition, as part of Phase II activities, the Permittees will perform waste examination activities per Section B7-1b(4) and, as necessary, identify and resolve waste shipment irregularities. Only those waste containers that pass all Phase II waste screening determinations will be eligible for storage or disposal at WIPP. For each container stored or disposed of at the WIPP facility, the Permittees shall assure that the generator/storage sites provide the following information:

Hazardous Waste Manifest Information:

- Generator/storage site name and EPA ID
- Generator/storage site contact name and phone number
- Quantity of waste
- List of the hazardous waste numbers in the shipment
- Listing of all shipping container IDs ( Shipping Package serial number)
- Signature of authorized generator representative

Specific Waste Container information:

- Waste stream identification number
- List of hazardous waste numbers per container
- Certification data
- Shipping data (assembly numbers, ship date, shipping category, etc.)

This information shall also be supplied electronically to the WWIS. The container-specific information will be supplied electronically as described in Section B7-1a(2), and shall be supplied prior to the Permittees' storage or disposal of the waste.

The Permittees will verify each approved shipment upon receipt at WIPP against the data on the WWIS shipment summary report to assure containers have the required information. A Waste Receipt Checklist will be used to document the verification.

B7-1b(1) Examination of the EPA Uniform Hazardous Waste Manifest and Associated Waste  
Tracking Information

Upon receipt of a TRU mixed waste shipment, the Permittees will make a determination of EPA Uniform Hazardous Waste Manifest completeness and sign the manifest to allow the driver to depart. The Permittees will then make a determination of waste shipment completeness by checking the unique, bar-coded identification number found on each container holding TRU mixed waste against the WWIS.

The WWIS links the bar-coded identification numbers of all containers in a specific waste shipment to the waste assembly (for 7-packs, 4-packs, and 3-packs) and to the shipment identification number, which is also written on the EPA Hazardous Waste Manifest. For shipments in the RH-TRU 72B cask, only one payload container is bar-coded. For shipments in the CNS 10-160B cask, the WWIS links the bar-coded identification numbers of all containers in a specific waste shipment to the shipment identification number, which is also written on the EPA hazardous waste manifest. Generators electronically transmit the waste shipment information to the WWIS before the TRU mixed waste shipment is transported. Once a TRU mixed waste shipment arrives, the Permittees verify the identity of each cask or container (or one container in a bound 7-pack, 4-pack, or 3-pack) using the data already in the WWIS.

The WWIS will maintain waste container receipt and emplacement information provided by the Permittees. It will include, among other items, the following information associated with each container of TRU mixed waste:

- Package inner containment vessel or shipping cask closure date
- Package (container or canister) receipt date
- Overpack identification number (if appropriate)
- Package (container or canister) emplacement date
- Package (container or canister) emplacement location

Manifest discrepancies may be identified during manifest examination, container bar-code WWIS data comparison, or during waste examination on-site. A manifest discrepancy is a difference between the quantity or type of hazardous waste designated on the manifest and the quantity or type of hazardous waste the WIPP facility actually receives. The generator/storage site technical contact (as listed on the manifest) will be contacted to resolve the manifest discrepancy. If the manifest discrepancy is identified prior to the containers being removed from the package or shipping cask, the waste will be retained in the parking area staging area. If the discrepancy is identified after the waste containers are removed from the package or cask, the waste will be retained in a waste staging area until the manifest discrepancy is resolved. Errors on the manifest can be corrected by the WIPP facility with a verbal (followed by a mandatory written) concurrence by the generator/storage site technical contact. All manifest discrepancies that are unresolved within fifteen (15) days of receiving the waste will be immediately reported to the NMED in writing. Notifications to the NMED will consist of a letter describing the manifest discrepancies, discrepancy resolution, and a copy of the manifest. If the

manifest discrepancies have not been resolved within sixty (60) days of waste receipt, the shipment will be returned to the generator/storage facility or another off-site facility. If it becomes necessary to return waste containers to the generator/storage site, a new EPA Uniform Hazardous Waste Manifest may be prepared by the Permittees.

Documentation of the returned containers will be recorded in the WWIS. Changes will be made to the WWIS data to indicate the current status of the container(s). The reason for the WWIS data change and the record of the WWIS data change will be maintained in the change log of the WWIS, which will provide an auditable record of the returned shipment.

The Permittees will be responsible for the resolution of discrepancies, notification of the NMED, as well as returning the original copy of the manifest to the generator/storage site.

B7-1b(2) Examination of the Land Disposal Restriction (LDR) Notice

TRU mixed waste designated by the Secretary of Energy for disposal at WIPP is exempt from the LDRs by the Land Withdrawal Act Amendment (Public Law 104-201). This amendment states that WIPP "Waste is exempted from treatment standards promulgated pursuant to section 3004(m) of the Solid Waste Disposal Act (42 U.S. C. 6924(m)) and shall not be subjected to the Land Disposal prohibitions in section 3004(d), (e), (f), and (g) of the Solid Waste Disposal Act." Therefore, with the initial shipment of a TRU mixed waste stream, the generator shall provide the Permittees with a one time written notice. The notice must include the information listed below:

Land Disposal Restriction Notice Information:

- EPA Hazardous Waste Number(s) and Manifest Numbers of first shipment of a mixed waste stream
- Statement: this waste is not prohibited from land disposal
- Date the waste is subject to prohibition

This information is the applicable information taken from column "268.7(a)(4)" of the "Generator Paperwork Requirements Table" in 20.4.1.800 NMAC (incorporating 40 CFR 268.7(a)(4)). Note that item "5" from the "Generator Paperwork Requirements Table" is not applicable since waste analysis data are provided electronically via the WWIS and item "7" is not applicable since waste designated by the Secretary of Energy for disposal at WIPP is exempted from the treatment standards.

The Permittees will review the LDR notice for accuracy and completeness. The generator will prepare this notice in accordance with the applicable requirements of 20.4.1.800 NMAC (incorporating 40 CFR §268.7(a)(4)).

B7-1b(3) Verification

The Permittees will determine whether there are any TRU mixed waste irregularities. The following items will be inspected for each TRU mixed waste shipment arriving at the WIPP facility:

- Whether the number and type of containers holding TRU mixed waste match the information in the WWIS
- Whether there are any container defects.

The Permittees will verify that the containers (as identified by their container ID numbers) are the containers for which accepted data already exists in the WWIS. A check will be performed by the Permittees comparing the data on the WWIS Shipment Summary Report for the shipment to the actual shipping papers (including the EPA Hazardous Waste Manifest). This check also verifies that the containers included in the shipment are those for which approved shipping data already exist in the WWIS Transportation Data Module (Table B7-1). For standard waste boxes (SWBs) and ten drum overpacks (TDOPs), this check will include comparing the barcode on the container with the container number on the shipping papers and the data on the WWIS Shipment Summary Report. For 7-pack assemblies, one of the seven container barcodes will be read by the barcode reader and compared to the assembly information for this container on the WWIS Shipment Summary Report. This will automatically identify the remaining six containers in the assembly. This process enables the Permittees to identify all of the containers in the assembly with minimum radiological exposure. If all of the container IDs and the information on the shipping papers agree with the WWIS Shipment Summary Report, and the shipment was examined by the Permittees per Section B7-1b(4) of the WAP at an off-site facility, the containers will be approved for storage or disposal at the WIPP facility.

B7-1b(4) Permittees' Examination of a Representative Subpopulation of the Waste

The Permittees shall determine that the waste contains no ignitable, corrosive, or reactive waste through radiography (Section B7-1b(5)) or the use of visual examination (Section B7-1b(6)) of a statistically representative subpopulation of the waste. Waste examination will be performed on randomly selected containers from each waste stream shipment of TRU mixed waste prior to storage or disposal at WIPP. This examination may be performed either on-site after the shipment is received or at an off-site facility (e.g., generator/storage site) prior to receipt. Figure B7-3 presents the overall waste examination process. Figure B7-4 presents the waste examination process at the WIPP facility. Figure B7-5 presents the waste examination process at an off-site facility.

The Permittees' examination of the waste encompasses verification that the physical characteristics of the TRU mixed waste correspond with its waste stream description and that the waste does not contain liquids in excess of TSDF-WAC limits or compressed gases. These techniques can detect liquids that exceed 1 percent volume of the container and containerized gases, which are prohibited from storage or disposal at the WIPP facility. The prohibition of liquids and containerized gases prevents the storage or disposal of ignitable, corrosive, or reactive wastes. Radiography and/or visual examination will assure that the physical form of the waste matches its waste stream description (i.e.,

1 Homogeneous Solids, Soil/Gravel, or Debris Waste). Because containers of waste will not be opened  
2 at the WIPP site, visual examination at WIPP will be based on the Permittee' review of video and  
3 audio recordings by the generator/storage site of the visual examination of the waste, or by review of  
4 the generator's visual examination records (i.e., visual examination data forms or packaging logs). The  
5 results of the Permittees waste examination activities, including radiography and visual examination  
6 records (data sheets, packaging logs, and/or video and audio recordings) will be maintained in the  
7 WIPP facility operating record. Noncompliant waste identified during waste examination will be  
8 managed as described in Section B7-1b(9).

9 The Permittees shall randomly select 7 percent of each waste stream shipment for examination. This  
10 equates to a minimum of one container from each fourteen containers in each waste stream in each  
11 designated shipment. If there are less than fourteen containers from a waste stream in a particular  
12 shipment, a minimum of one container from the waste stream shipped will be selected. If the random  
13 selection of containers in a shipment occurs prior to loading the waste containers into the Shipping  
14 Package, the randomly selected containers may be consolidated into a single Type B package  
15 consistent with transportation requirements. Documentation of the random selection of containers for  
16 waste examination will be placed in the WIPP facility operating record.

17 B7-1b(5) Radiography Methods Requirements

18 Radiography has been developed by the Permittees specifically to aid in the examination and  
19 identification of containerized waste. The Permittees shall describe all activities required to achieve the  
20 radiography objectives in SOPs. These SOPs shall include instructions specific to the radiography  
21 system(s) used by the Permittees either at the WIPP site or at an off-site facility (e.g., the  
22 generator/storage site). For example, to detect liquids, some systems require the container to be  
23 rotated back and forth while other systems require the container to be tilted.

24 A radiography system (e.g., real time radiography, digital radiography/computed tomography) normally  
25 consists of an X-ray-producing device, an imaging system, an enclosure for radiation protection, a  
26 waste container handling system, a video and audio recording system, and an operator control and  
27 data acquisition station. Although these six components are required, it is expected there will be some  
28 variation within a given component between radiography systems. The radiography system shall have  
29 controls or an equivalent process which allow the operator to control image quality. On some  
30 radiography systems, it should be possible to vary the voltage, typically between 150 to 400 kilovolts  
31 (kV), to provide an optimum degree of penetration through the waste. For example, high-density  
32 material should be examined with the X-ray device set on the maximum voltage. This assures  
33 maximum penetration through the waste container. Low-density material should be examined at lower  
34 voltage settings to improve contrast and image definition. The imaging system typically utilizes either a  
35 fluorescent screen and a low-light television camera or x-ray detectors to generate the image.

36 To perform radiography, the waste container is scanned while the operator views the television  
37 screen. A video and audio recording is made of the waste container scan and is maintained in the  
38 WIPP facility operating record. A radiography data form is also used to document the Waste Matrix  
39 Code and assure that the waste container contains no ignitable, corrosive, or reactive waste by

1 assuring the absence of liquids in excess of TSDF-WAC limits or compressed gases, and that the  
2 physical form of the waste is consistent with the waste stream description documented on the WSPF.  
3 Containers whose contents prevent full examination of the remaining contents shall be subject to  
4 visual examination unless the Permittees certify that visual examination would provide no additional  
5 relevant information for that container based on the acceptable knowledge information for the waste  
6 stream. Such certification shall be documented in the WIPP facility operating record.

7 For containers which contain classified shapes and undergo radiography, the radiography will occur at  
8 a facility with appropriate security provisions and the video and audio recording will be considered  
9 classified. The radiography data forms will not be considered classified.

10 B7-1b(5)(i) Radiography Training

11 The radiography system involves qualitative and semiquantitative evaluations of visual displays.  
12 Operator training and experience are the most important considerations for assuring quality controls in  
13 regard to the operation of the radiography system and for interpretation and disposition of radiography  
14 results. Only trained personnel shall be allowed to operate radiography equipment.

15 The Permittee radiography operators performing waste examination shall be trained in accordance  
16 with the requirements of Permit Attachment H1.

17 B7-1b(5)(ii) Radiography Oversight

18 A training drum with internal containers of various sizes shall be scanned biannually by each operator.  
19 The video and audio media shall then be reviewed by a supervisor to assure that operators'  
20 interpretations remain consistent and accurate. Imaging system characteristics shall be verified on a  
21 routine basis.

22 Independent replicate scans and replicate observations of the video output of the radiography process  
23 shall be performed under uniform conditions and procedures. Independent replicate scans shall be  
24 performed on one waste container per day or once per shipment, whichever is less frequent.  
25 Independent observations of one scan (not the replicate scan) shall also be made once per day or  
26 once per shipment, whichever is less frequent, by a qualified radiography operator other than the  
27 individual who performed the first examination.

28 The Permittees shall be responsible for monitoring the quality of the radiography data and calling for  
29 corrective action, when necessary.

B7-1b(6) Visual Examination Methods Requirements

Visual examination may also be used as a waste examination method by the Permittees. Visual examination shall be conducted to describe all contents of a waste container. The description shall clearly identify all discernible waste items, residual materials, packaging materials, or waste material parameters. Visual examination may be used by the Permittees to examine a statistically representative subpopulation of the waste received for storage and disposal at the WIPP to assure that the waste contains no ignitable, corrosive, or reactive waste. This is achieved by assuring that the waste contains no residual liquids in excess of TSDF-WAC limits or compressed gases, and that the physical form of the waste matches the waste stream description documented on the WSPF. A visual examination data form is used to document this information. During packaging, the waste container contents are directly examined by trained personnel. This waste examination may be performed by the Permittees at the WIPP site or at an off-site facility, e.g., the generator/storage site. The visual examination may be recorded on video and audio media, or alternatively, by using a second operator to provide additional verification by reviewing the contents of the waste container to assure correct reporting.

Because waste containers will not be opened at the WIPP site and to keep radiation doses as low as reasonably achievable at the generator/storage sites, visual examination for waste examination may be performed by review, by trained Permittee visual examination operators, of video media prepared by the generator/storage site during their visual examination of the waste. If the Permittees perform waste examination by review of video media, the video record of the visual examination must be sufficiently complete for the Permittees to assure the Waste Matrix Code and waste stream description, and verify the waste contains no residual liquids in excess of TSDF-WAC limits or compressed gases.

Visual examination for waste examination may also be performed by review, by trained Permittee visual examination operators, of visual examination data forms or packaging logs prepared by the generator during their packaging of the waste. To be acceptable, the generator/storage site visual examination data must be signed by two generator/storage site personnel who witnessed the packaging of the waste and must provide sufficient information for the Permittees to determine that the waste container contents match the waste stream description on the WSPF and the waste contains no liquids in excess of TSDF-WAC limits or compressed gases. The Permittees will document their review of generator/storage site visual examination data on Permittee visual examination data forms.

Visual examination video media of containers which contain classified shapes shall be considered classified information. Visual examination data forms will not be considered classified information.

B7-1b(6)(i) VE Training

The Permittee visual examination operators performing waste examination shall be trained in accordance with the requirements of Permit Attachment H1.

B7-1b(6)(ii) VE Oversight

The Permittees shall designate a visual examination expert. The visual examination expert shall be familiar with the waste generating processes that were used to generate the waste streams being examined. The visual examination expert shall be responsible for the overall direction and implementation of the Permittee's visual examination program.

B7-1b(7) Quality Assurance Objectives (QAOs) for Radiography and Visual Examination

The QAOs the Permittees must meet for radiography and visual examination are detailed in this section. If the QAOs described below are not met, then corrective action shall be taken.

B7-1b(7)(i) Radiography QAOs

The QAOs for radiography are detailed in this section. If the QAOs described below are not met, then corrective action shall be taken.

Data to meet these objectives must be obtained from a video and audio recorded scan provided by trained radiography operators. Results must also be recorded on a radiography data form. The precision, accuracy, representativeness, completeness, and comparability objectives for radiography data are presented below.

Precision

Precision is maintained by reconciling any discrepancies between two radiography operators with regard to the waste stream waste examination, identification of liquids in excess of TSDF-WAC limits and identification of compressed gases through independent replicate scans and independent observations.

Accuracy

Accuracy is obtained by using a target to tune the image for maximum sharpness and by requiring operators to successfully identify 100 percent of the required items in a training container during their initial qualification and subsequent requalification.

Representativeness

Representativeness is assured by performing radiography on a random sample of waste containers from each waste stream in each shipment.

Completeness

A video and audio media recording of the radiography examination and a validated radiography data form will be obtained for 100 percent of the waste containers subject to radiography.

Comparability

The comparability of radiography data from different operators shall be enhanced by using standardized radiography procedures and operator qualifications.

B7-1b(7)(ii) Visual Examination QAOs

Results must be recorded on a visual examination data form. The precision, accuracy, representativeness, completeness, and comparability objectives for visual examination data are presented below.

Precision

Precision is maintained by reconciling any discrepancies between the operator and the independent technical reviewer with regard to the waste stream waste examination, identification of liquids in excess of TSDf-WAC limits and identification of compressed gases.

Accuracy

Accuracy is maintained by requiring operators to pass a comprehensive examination and demonstrate satisfactory performance in the presence of the VE expert during their initial qualification and subsequent requalification.

Representativeness

Representativeness is assured by performing visual examination on a random sample of waste containers within each waste stream in each shipment.

Completeness

A validated visual examination data form will be obtained for 100 percent of the waste containers subject to visual examination.

Comparability

The comparability of VE data from different operators shall be enhanced by using standardized VE procedures and operator qualifications.

B7-1b(8) Review and Validation of Radiography and Visual Examination Data Used for Waste Examination

This section describes the requirements for review and validation of radiography and visual examination data by the Permittees.

B7-1b(8))(i) Independent Technical Review

The radiography and/or visual examination data for each shipment shall receive an independent technical review. This review will be performed before the affected waste shipment is stored or disposed of at the WIPP facility. The review shall be performed by an individual other than the data generator who is qualified to have performed the work. The review will be performed in accordance with approved Permittee SOPs and will be documented on a review checklist. The reviewer(s) must approve the data as evidenced by signature, and as a consequence, assure the following:

- Data generation and reduction were conducted in a technically correct manner in accordance with the methods used (procedure with revision). Data were reported in the proper units and correct number of significant figures.
- The data have been reviewed for transcription errors.
- Radiography video and audio media recordings have been reviewed (independent observation) on a waste container basis at a minimum of once per shipment or once per day of operation, whichever is less frequent. The radiography video/audio recording will be reviewed against the data reported on the radiography form to assure that the data are correct and complete.

B7-1b(8)(ii) Permittee Management Review

The radiography and/or visual examination data for each shipment shall receive a Permittee management review. This review will be performed before the affected waste shipment is disposed of at the WIPP. The review shall be performed by a designated member of Permittee management. The review will be performed in accordance with approved Permittee SOPs and will be documented on a review checklist. The reviewer(s) must approve the data as evidenced by signature, and as a consequence, assure the following:

- The data are technically reasonable based on the technique used.
- The data have received independent technical review.
- The data indicate that the waste examined contained no ignitable, corrosive, or reactive waste and that the physical form of the waste was consistent with the waste stream description in the WSPF.
- QC checks have been performed (e.g., replicate scans, image quality checks).
- The data meet the established QAOs

Upon completion of the Permittee management review, the waste examination data for the shipment

1 shall be submitted to the WIPP facility operating record. Waste examination data includes, radiography  
2 and visual examination data forms, video/audio media, and review checklists.

3 B7-1b(9) Noncompliant Waste Identified During Waste Examination

4 If during waste examination at the generator/storage site, the Permittees identify noncompliant waste  
5 (i.e., the waste does not match the waste stream description documented in the WSPF or there are  
6 liquids in excess of TSDF-WAC limits or compressed gases) the waste will not be shipped. Shipments  
7 of the affected waste stream will be suspended and will not resume until discrepancies have been  
8 satisfactorily resolved.

9 If during waste examination at WIPP the Permittees identify noncompliant waste, the Permittees will  
10 determine if this constitutes a manifest discrepancy and, if so, comply with the manifest discrepancy  
11 reporting requirements of Section B7-1b(1). When discrepancies relative to waste form or prohibited  
12 items cannot be resolved with the generator/storage sites, the entire shipment or the non-  
13 conforming portion of the shipment, will be returned to the generator/storage site or another off-site  
14 facility. The Permittees will suspend further shipments of the affected waste stream and issue a CAR  
15 to the generator/storage site. Shipments of the affected waste stream shall not resume until the CAR  
16 has been closed. The NMED will be notified within 24 hours of any suspension of waste stream  
17 shipments due to the identification of nonconforming waste during waste examination. The Permittees  
18 may, at their discretion, continue to examine all containers in the waste stream shipment and dispose  
19 of the conforming containers.

20 As part of the corrective action plan in response to the CAR, the generator/storage site will evaluate  
21 whether the waste analysis documented in the Waste Analysis Information Summary and/or WSPF for  
22 the waste stream must be updated because the results of waste examination for the waste stream  
23 indicated that the TRU waste being examined did not match the waste stream description. If the Waste  
24 Analysis Information Summary and/or WSPF requires revision, shipments of the affected waste stream  
25 shall not resume until the revised waste stream waste analysis information has been reviewed and  
26 approved by the Permittees. Waste streams that have discrepancies that cannot be resolved will be  
27 returned to the generator/storage site. Repeated nonconformances by a site in implementing and  
28 documenting WAP requirements (Permit Attachment B) will result in the termination of storage or  
29 disposal of the site's waste, waste stream(s), or summary category group(s), as applicable.  
30 Management, storage, or disposal of the subject waste summary category at WIPP will not resume  
31 until the Permittees find that all corrective actions have been implemented and the site complies with  
32 all applicable requirements of the WAP.

33 B7-2 Waste Shipment Screening QA/QC

34 Waste shipment screening QA/QC assures that TRU mixed waste received is that which has been  
35 approved for shipment during the Phase I and II screening. This is accomplished by maintaining  
36 QA/QC control of the waste shipment screening process. The screening process will be controlled by  
37 administrative processes which will generate records documenting waste receipt that will become part  
38 of the waste receipt record. The waste receipt record documents that container identifications

correspond to shipping information and approved TRU mixed waste streams. The Permittees will extend QA/QC practices to the management of all records associated with waste shipment screening determinations.

#### B7-3 Permittees' Corrective Action Process

The Permittees shall initiate a corrective action process when internal nonconformances and nonconformances at the generator/storage sites are identified. Activities and processes that do not meet requirements are documented as deficiencies.

When a deficiency is identified by the Permittees, the following process action steps are required:

- The condition is documented on a Corrective Action Report (CAR) by the individual identifying the problem.
- The Permittees have designated the CAR Initiator and Assessment Team Leader to review the CAR, determine validity of the finding (determine that a requirement has been violated), classify the significance of the condition, assign a response due date, and issue the CAR to the responsible party.
- The responsible organization reviews the CAR, evaluates the extent and cause of the deficiency and provides a response to the Permittees, indicating remedial actions and actions to preclude recurrence that will be taken.
- The Permittees review the response from the responsible organization and, if acceptable, communicate the acceptance to the responsible organization.
- The responsible organization completes remedial actions and actions to preclude recurrence of the condition.
- After all corrective actions have been completed, the Permittees schedule and perform a verification to assure that corrective actions have been completed and are effective. When all actions have been completed and verified as being effective, the CAR is closed by the CAR Initiator and Assessment Team Leader on behalf of the Permittees.
- As part of the planning process for subsequent audits and surveillances, past deficiencies are reviewed and the previous deficient activity or process is subject to reassessment.

#### B7-4 Records Management and Reporting

As part of the WIPP facility's operating record, data and documents associated with waste analysis and examination data are managed in accordance with standard records management practices.

All waste analysis data for each TRU mixed waste container transmitted to WIPP and generated by the Permittees shall be maintained by the Permittees for the active life of the WIPP facility plus two years. The active life of the WIPP facility is defined as the period from the initial receipt of TRU mixed waste at the facility until NMED receives certification of final closure of the facility. After their active life, the records shall be retired to the Federal Records Center and maintained for 30 years. These records will then be offered to the National Archives. However, this disposition requirement does not preclude the inclusion of these records in the permanent marker system or other requirements for institutional control.

The storage of the Permittees' copy of the manifest, LDR information, waste analysis data, WSPFs, waste examination activities, and other related records will be identified on the appropriate records inventory and disposition schedule.

Waste analysis and waste examination data and documents are part of the WIPP facility operating record are managed in accordance with the following guidelines:

B7-4a General Requirements

- Records shall be legible
- Corrections shall be made with a single line through the incorrect information, and the date and initial of the person making the correction shall be added
- Black ink is encouraged, unless a copy test has been conducted to assure the other color ink will copy
- Use of highlighters on records is discouraged
- Records shall be reviewed for completeness
- Records shall be validated by the cognizant manager or designee

B7-4b Records Storage

- Active records shall be stored when not in use
- Quality records shall be kept in a one-hour (certified) fire-rated container or a copy of a record shall be stored separately (sufficiently remote from the original) in order to prevent destruction of both copies as a result of a single event such as fire or natural disaster
- Unauthorized access to the records is controlled by locking the storage container or controlling personnel access to the storage area

The following records will be maintained for waste analysis purposes as part of the WIPP facility operating record:

- Completed WIPP WSPFs and accompanying Waste Analysis Information Summary, including individual container data as transferred on the WWIS (or received as hard-copy) and any discrepancy-related documentation as specified in Section B7-1a(3).

- 1       •       Radiography and visual examination records (data sheets, packaging logs, and video  
2       =       and audio recordings) of waste examination activities
- 3       •       Completed Waste Receipt Checklists and discrepancy-related documentation as  
4       =       specified in Section B7-1b.
- 5       •       WIPP WWIS Waste Emplacement Report as specified in Section B7-1a(2)
- 6       •       Audit reports and corrective action reports from the Permittees' Audit and Surveillance  
7       =       Program audits as specified in Section B7-1a(1) and Permit Attachment B6
- 8       •       CARs and closure information for corrective actions taken due to nonconforming waste  
9       =       being identified during waste examination by the Permittees

10   These records will be maintained for each TRU mixed waste managed at the WIPP facility.

11   B7-5 Reporting

12   The Permittees will provide a biennial report in accordance with 20.4.1.500 NMAC (incorporating 40  
13   CFR §264.75) to NMED that includes information on actual volume and waste descriptions received  
14   for disposal during the time period covered by the report.

15   B7-6 List of References

16   U.S. Department of Energy (DOE), 2001, "WIPP Waste Information System User's Manual for Use by  
17   Shippers/Generators", DOE/CAO 97-2273, U.S. Department of Energy.

18   U.S. Department of Energy (DOE), 1997, Resource Conservation and Recovery Act Part B Permit  
19   Application for the Waste Isolation Pilot Plant", Revision 6.5, U.S. Department of Energy.  
20

TABLE B7-1  
WIPP WASTE INFORMATION SYSTEM DATA FIELDS<sup>a</sup>

Characterization Module Data Fields<sup>b</sup>

<u>Container ID<sup>c</sup></u>	<u>Total VOC Sample Date<sup>e</sup></u>
<u>Generator EPA ID</u>	<u>Total VOC Analysis Date<sup>e</sup></u>
<u>Generator Address</u>	<u>Total VOC Analyte Name<sup>d,e</sup></u>
<u>Generator Name</u>	<u>Total VOC Analyte Concentration<sup>d,e</sup></u>
<u>Generator Contact</u>	<u>Total Metal Sample Date<sup>e</sup></u>
<u>Hazardous Code Number</u>	<u>Total Metal Analysis Date<sup>e</sup></u>
<u>Headspace Gas Sample Date</u>	<u>Total Metal Analyte Name<sup>d,e</sup></u>
<u>Headspace Gas Analysis Date</u>	<u>Total Metal Analyte Concentration<sup>d,e</sup></u>
<u>Layers of Packaging</u>	<u>Semi-VOC Sample Date<sup>e</sup></u>
<u>Liner Exists</u>	<u>Semi-VOC Analysis Date<sup>e</sup></u>
<u>Liner Hole Size</u>	<u>Semi-VOC Analyte Name<sup>d,e</sup></u>
<u>Filter Model</u>	<u>Semi-VOC Concentration<sup>d,e</sup></u>
<u>Number of Filters Installed</u>	<u>Transporter EPA ID</u>
<u>Headspace Gas Analyte<sup>d,e</sup></u>	<u>Transporter Name</u>
<u>Headspace Gas Concentration<sup>d,e</sup></u>	<u>Visual Exam Container<sup>ef</sup></u>
<u>Headspace Gas Char. Method<sup>d,e</sup></u>	<u>Waste Material Parameter<sup>d</sup></u>
<u>Total VOC Char. Method<sup>d,e</sup></u>	<u>Waste Material Weight<sup>d</sup></u>
<u>Total Metals Char. Method<sup>d,e</sup></u>	<u>Waste Matrix Code</u>
<u>Total Semi-VOC Char. Method<sup>d,e</sup></u>	<u>Waste Matrix Code Group</u>
<u>Item Description Code</u>	<u>Waste Stream Profile Number</u>
<u>Haz. Manifest Number</u>	
<u>NDE Complete<sup>ef</sup></u>	

Certification Module Data Fields

<u>Container ID<sup>c</sup></u>	<u>Handling Code</u>
<u>Container type</u>	
<u>Container Weight</u>	
<u>Contact Dose Rate</u>	
<u>Container Certification date</u>	
<u>Container Closure Date</u>	

Transportation Data Module

<u>Shipping Package Number</u>	<u>Ship Date</u>
<u>Assembly Number<sup>fg</sup></u>	<u>Receive Date</u>
<u>Container IDs<sup>c,d</sup></u>	
<u>ICV Closure Date</u>	

1	<u>Disposal Module Data</u>
2	<u>Container ID <sup>c</sup></u>
3	<u>Disposal Date</u>
4	<u>Disposal Location</u>

5 <sup>a</sup> This is not a complete list of the WWIS data fields.

6 <sup>b</sup> Some of the fields required for waste analysis are also required for certification and/or transportation.

7 <sup>c</sup> Container ID is the main relational field in the WWIS Database.

8 <sup>d</sup> This is a multiple occurring field for each analyte, nuclide, etc.

9 <sup>e</sup> This is only reported for containers sampled

10 <sup>f</sup> These are logical fields requiring only a yes/no.

11 <sup>g</sup> Required for 7-packs of 55-gal drums, 4-packs of 85-gal drums, or 3-packs of 100-gal drums to tie all of the drums in that assembly together. This facilitates the identification of waste containers in a shipment without need to breakup the assembly.

12

Figure B-5  
TRU Mixed Waste  
Screening Flow  
Diagram

WIPP = Waste Isolation Pilot  
Plant

PHASE I

PHASE II

Figure B-1  
WIPP Waste  
Stream Profile  
Form

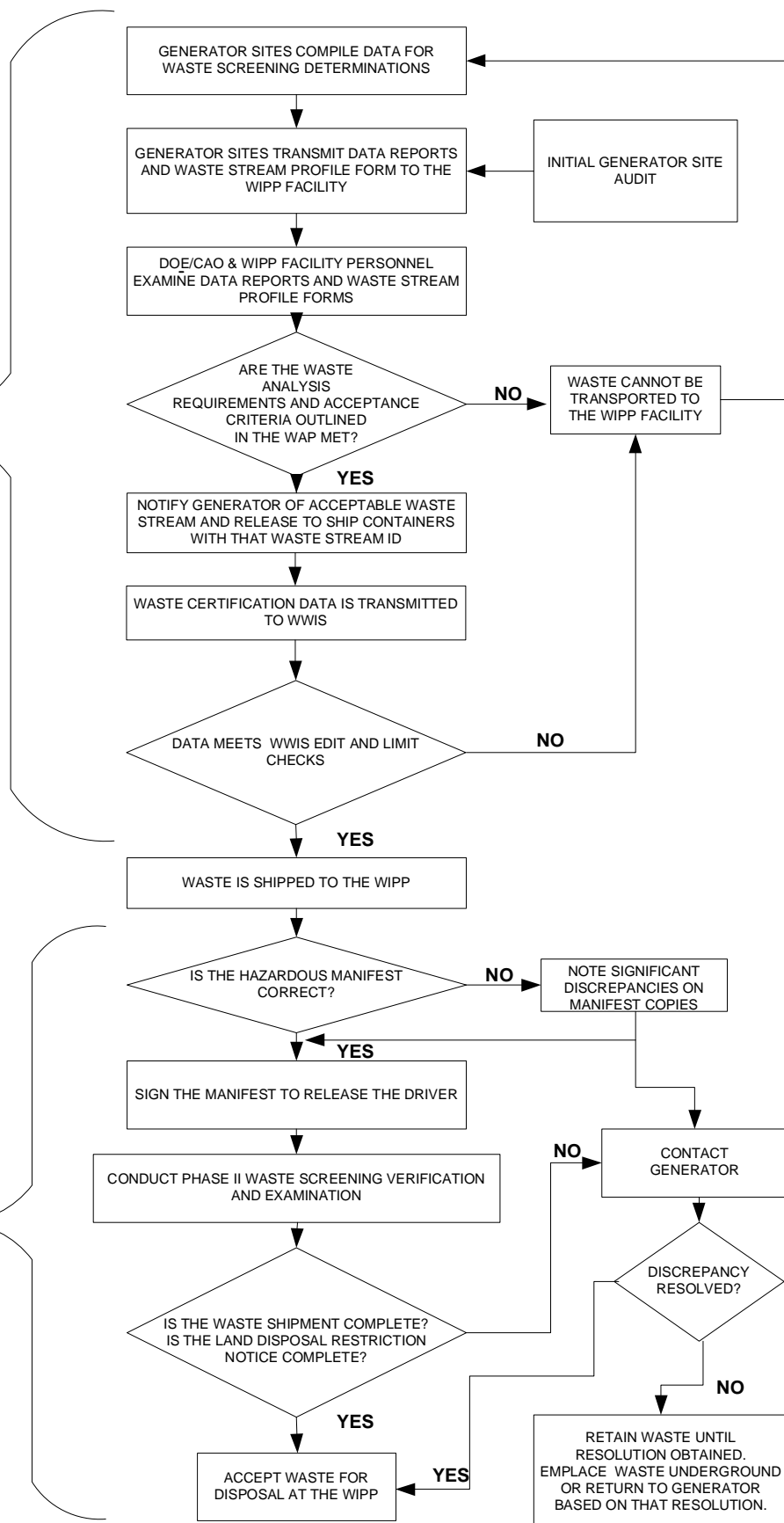
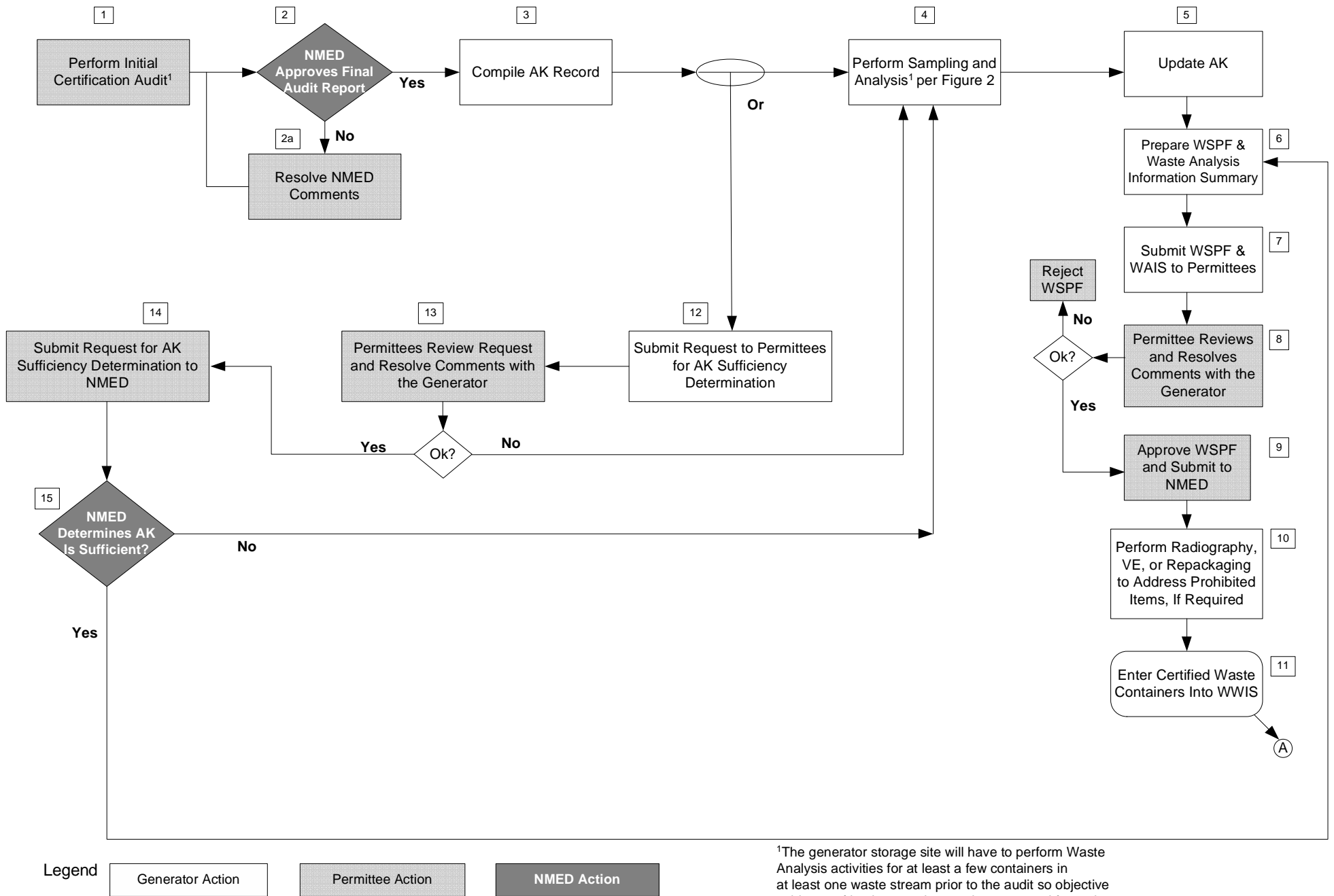
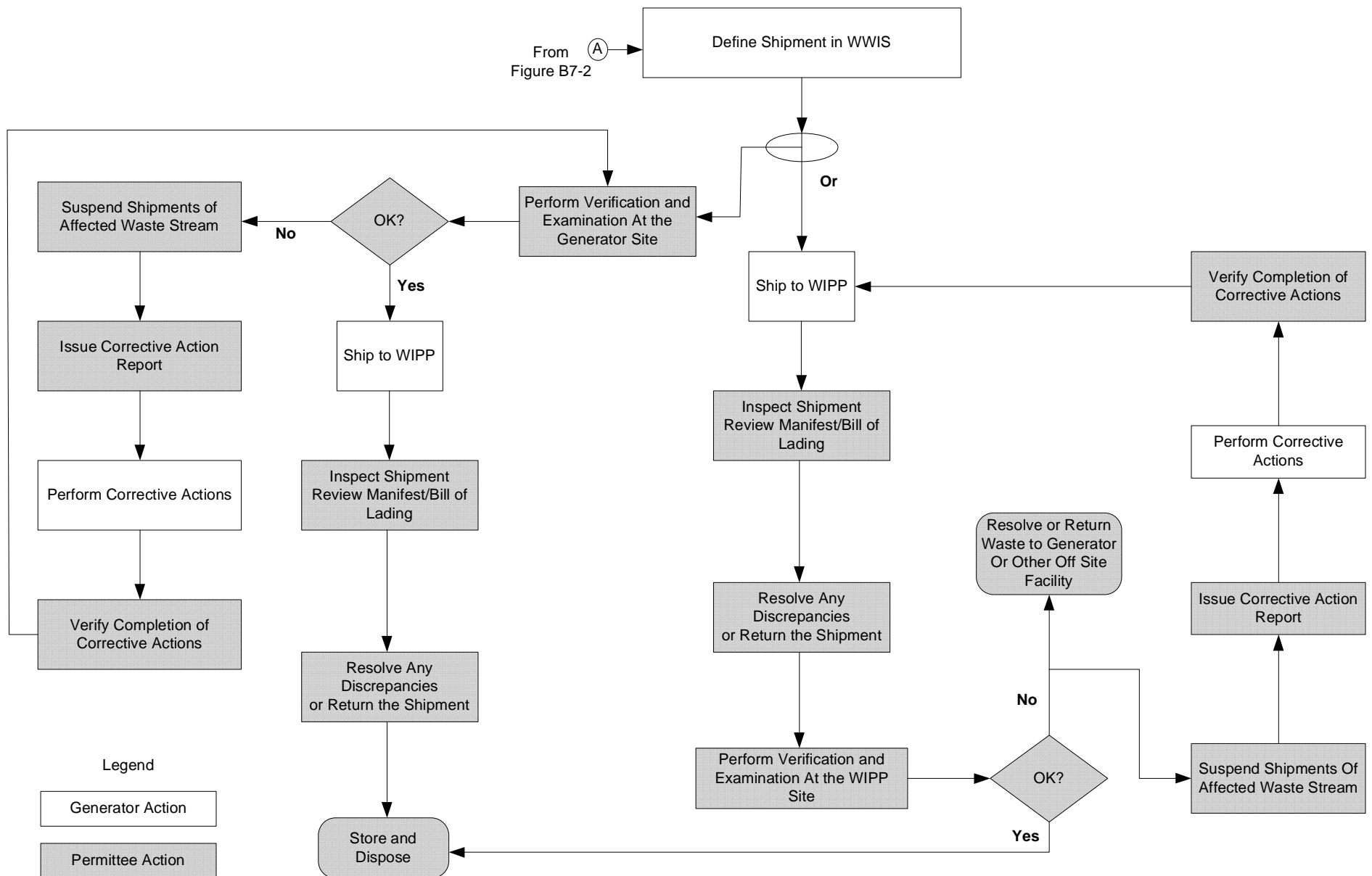


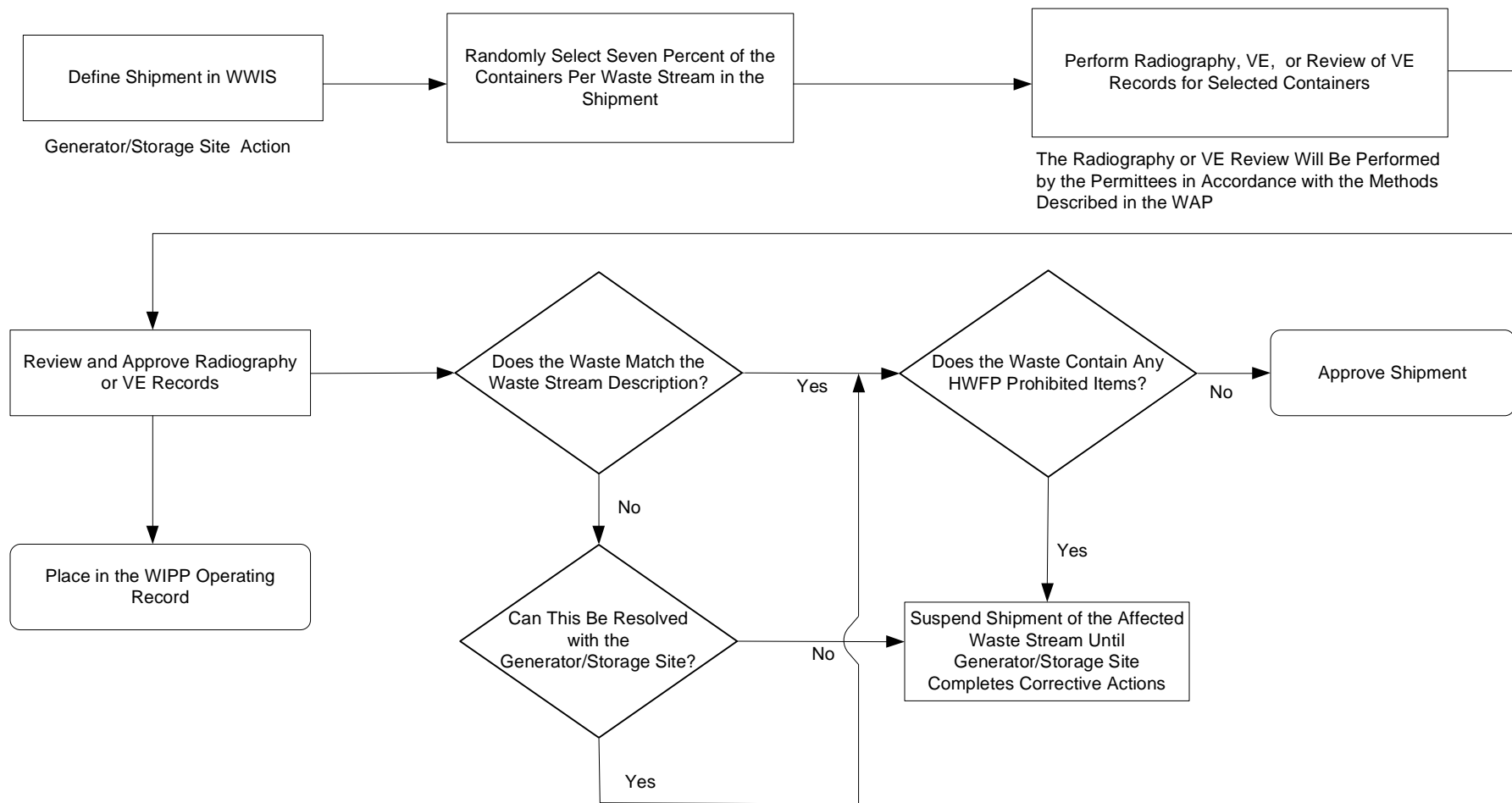
Figure B7-1  
TRU Mixed Waste Screening Flow Diagram



**Figure B7-2**  
**WASTE STREAM APPROVAL PROCESS**



**Figure B7-3**  
**WASTE VERIFICATION AND EXAMINATION PROCESS**



**Figure B7-4**  
**VERIFICATION AND EXAMINATION PROCESS AT THE GENERATOR/STORAGE SITES**  
**(OR OTHER OFF-SITE FACILITIES)**

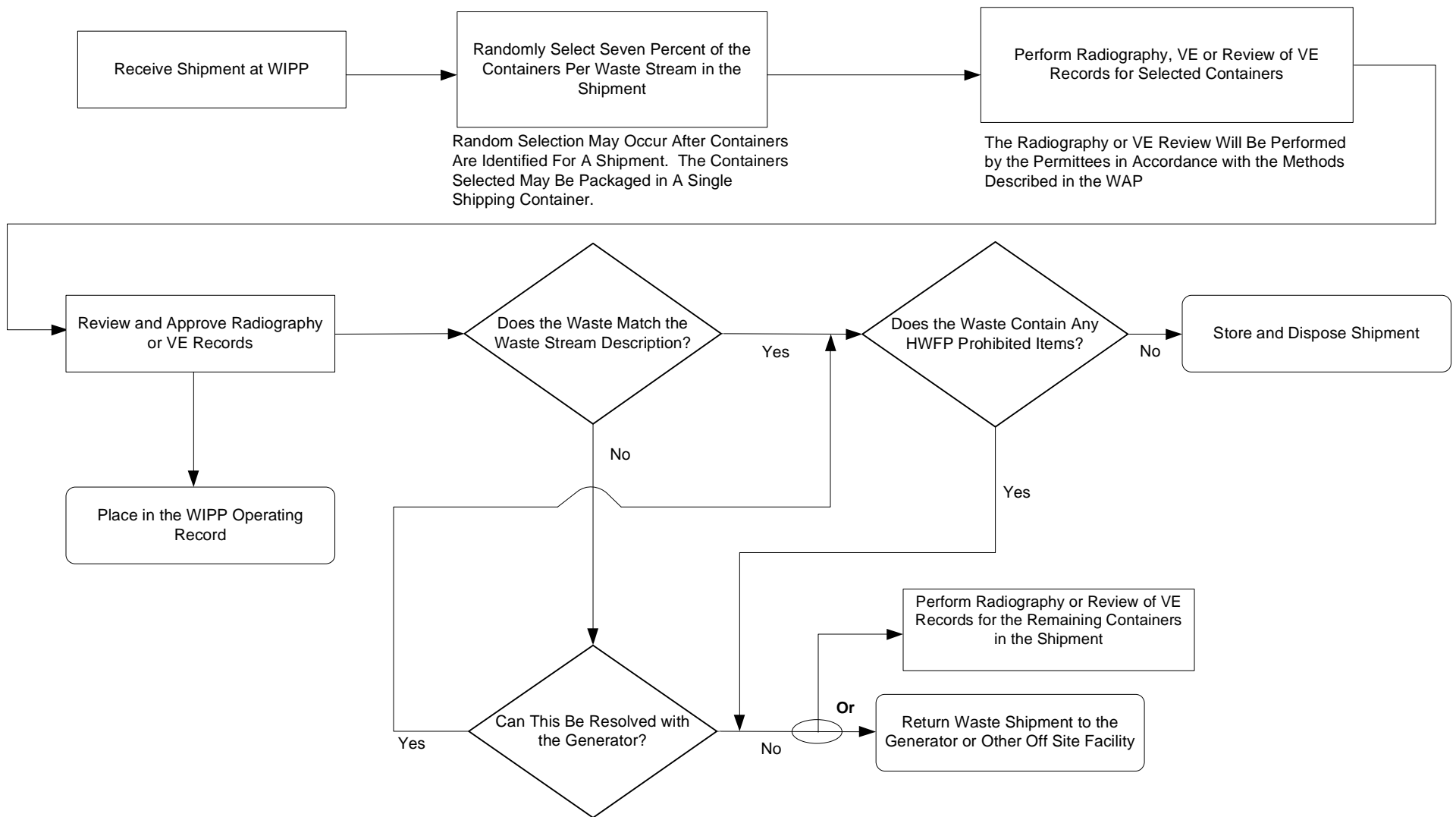


Figure B7-5  
VERIFICATION AND EXAMINATION PROCESS AT WIPP